Tanta university   Computer graphics course
Faculty of engineering   Second year students
Computer and automatic control department   Sheet 2, Date : 22/02/2012

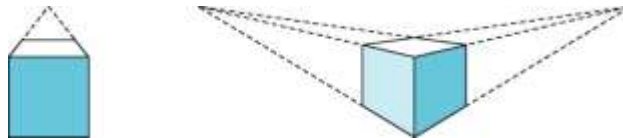
Graphics systems

1. Explain why images are better displayed than text on CRT monitors while text is better displayed than images on LCD monitors.

2. A graphics programmer or designer works with some interfaces or APIs to produces graphics. Two conceptual models could be used to describe the interaction between the programmer/designer and the interface/API: pen-plotter model and the 3D. Explain the difference between the two models.

3. The memory in a frame buffer must be fast enough to allow the display to be refreshed at a rate sufficiently high to avoid flicker. A typical workstation display can have a resolution of 1280 x 1024 pixels. If it is refreshed 72 times per second, how fast must the memory be? That is, how much time can we take to read one pixel from memory? What is this number for a 480 x 640 display that operates at 60 Hz but is interlaced?

4. Movies are generally produced on 35-mm film that has a resolution of approximately 2000 x 3000 pixels. What implication does this resolution have for producing animated images for a video show on a computer as compared with film?

5. Consider the perspective views of the cube shown below. The one on the left is called a one-point perspective because parallel lines in one direction of the cube—along the sides of the top— converge to a vanishing point in the image. In contrast, the image on the right is a two-point perspective. Characterize the particular relationship between the viewer, or a simple camera, and the cube that determines why one is a two-point perspective and the other is a one-point perspective.

6. To help you understand how rapidly graphics performance has improved is to go to the Web sites of some of the GPU manufacturers, such as NVIDIA and ATI, and look at the specifications for their products. Often the specs for older cards and GPUs are still there. How rapidly has geometric performance improved? What about pixel processing? How has the cost per rendered triangle decreased? Write down a report the compare between at least two GPUs for the geometric performance point of view.